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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,213	02/20/2004	Steven J. Fredette	C-3126	6680

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EXAMINER	
CLARK, CHRISTOPHER JAY	
ART UNIT	PAPER NUMBER
2836	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/783,213	FREDETTE, STEVEN J.	
	Examiner	Art Unit	
	Christopher J. Clark	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, and 3 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by the phrase "to augment the response of said fuel cell power plant and said inverter to transients on said lines." In order to provide compact prosecution, the examiner will consider the converter to provide voltage compensation when the voltage on the power lines drops below a nominal value.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jungreis (U.S. Patent 6,304,006; hereinafter referred to as "Jungreis '006") in view of Jungreis et al (U.S. Patent 6,134,124; hereinafter referred to as "Jungreis '124") and Gyugyi et al (U. S. Patent 5,329,222).

5. In re Claim 1, Jungreis '006 teaches the following apparatus as shown in Figure 3:

- A generator delivering AC power (18, Column 2 Lines 56-57) to three phase lines (Line 1 of Column 1 indicates that the figures are shown in one-line diagram form)
- An energy storage device (16, Column 1 Lines 15-16)
- An uninterruptible power supply (12, Column 1 Line 15) containing a DC/AC converter (A1, Line 17)
    - Connected to energy storage device (as seen in Figure 3)
    - Connected to three phase power lines (through switch S2 as seen in Figure 3)

6. Jungreis '006 discloses the claimed invention except for the implementation of a fuel cell power plant coupled to a DC to AC inverter to produce AC power. Jungreis '124 shows that a fuel cell power plant in combination with a DC/AC inverter is an equivalent AC generation known in the art (Column 3 Lines 44-47). Therefore, because these two power sources were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious at the time of the invention to substitute a fuel cell power plant with a DC/AC inverter for an AC generator.

7. Jungreis '006 also fails to teach a bi-directional converter capable of augmenting the response of the fuel cell and inverter to transients.

8. Gyugyi teaches using a bi-directional DC/AC converter (35, Column 5 Lines 20-24) connected to a storage device (31, Column 5 Line 10) that can augment the transient responses on power lines (Column 3 Lines 43-48).

9. The advantage of modifying the UPS of Jungreis '006 with the system as taught by Gyugyi is to provide a means to compensate for rapid transients in the power system since

Gyugyi states that a UPS is incapable of doing such and is not suitable for a larger utility environment (Column 2 Lines 51-57).

10. Jungreis '006 discloses the claimed invention except for the bi-directional converter capable of augmenting the response of the fuel cell and inverter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the system as taught by Gyugyi, since Gyugyi states that such a modification would provide a means to compensate for rapid transients in the power system since Gyugyi states that a UPS is incapable of doing such and is not suitable for a larger utility environment (Column 2 Lines 51-57).

11. In re Claim 2, Jungreis '006 as modified by Jungreis '124 and Gyugyi teaches the following:

- Three phase power lines being coupled to the critical load (14) through switch S2 [Figure 3 of Jungreis '006].
- The converter supplying power to a critical customer to avert lapses in power (Gyugyi teaches that transients are reduced during energy delivery in Lines 43-49 of Column 3).

12. In re Claim 3, Jungreis '006 teaches the following as seen in Figure 3:

- Three phase power lines connectable by first switches (S3) to a three-phase power grid (10) [Column 1 Lines 53-62]
- The converter (12 as modified by Gyugyi discussed above) connectable to said three-phase power lines by second switches (S2), said converter alternatively connectable by said second switches to said power grid (Column 1 Lines 34-42)

13. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jungreis '006 in view of Jungreis '124 and Gyugyi as applied to claim 1 above, and in further view of Hochgraf et al (U.S. Patent 6,794,844).

14. Jungreis '006 as modified by Jungreis '124, and Gyugyi has been discussed above, but does not teach a diode being connected between the fuel cell power plant and the battery.

15. Referring to Figure 2, Hochgraf et al teaches connecting the fuel cell power plant (24, Column 2 Line 59) to an energy storage device (28, Column 2 Line 60) through a diode (30, Column 2 Line 66). It should be noted that current (and thus power) can only be delivered from the fuel cell power plant to the energy storage device when there is greater voltage on the fuel cell power plant compared to the voltage of the energy storage device based on the known fundamental biasing characteristics of the diode.

16. The advantage of connecting the fuel cell power plant to the energy storage device through a diode is to charge the energy storage device (Column 2 Lines 59-60) as well as to prevent reverse current into the fuel cell device (Column 2 Lines 66-67 and Column 3 Lines 1-2).

17. Jungreis '006 as modified by Jungreis '124 and Gyugyi discloses the claimed invention except for the diode connected between the fuel cell power plant and the energy storage device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to connect a diode between the fuel cell power plant and the energy storage device as taught by Hochgraf et al, since Hochgraf et al states that such a modification would charge the energy storage device (Column 2 Lines 59-60) as well as prevent reverse current into the fuel cell device (Column 2 Lines 66-67 and Column 3 Lines 1-2).

18. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jungreis '006 in view of Jungreis '124, Gyugyi, and Hochgraf as applied to claim 4 above, and in further view of Early et al (U.S. Patent 4,961,151).

19. Jungreis '006 as modified by Jungreis '124, Gyugyi, and Hochgraf has been discussed above but does not teach a switch to interrupt the connection between the fuel cell power plant and the energy storage device.

20. Early et al teaches having a switch (102) to interrupt the connection between the fuel cell power plant (103) and the energy storage device (101) [Column 8 Lines 33-38].

21. The advantage of adding a switch to interrupt the connection between the fuel cell power plant and energy storage device is to prevent the energy storage device from being overcharged (Column 8 Lines 51-55).

22. Jungreis '006 as modified by Jungreis '124, Gyugyi, and Hochgraf discloses the claimed invention except for the switch to interrupt the connection between the fuel cell power plant and the energy storage device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to connect a switch to interrupt the connection between the fuel cell power plant and the energy storage device as taught by Early et al, since Early et al states that such a modification would prevent the energy storage device from being overcharged (Column 8 Lines 51-55).

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. King et al (U. S. Patent 7,129,593) discloses an energy storage and DC/AC inverter connectable to power grid and generator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher J. Clark whose telephone number is 571-270-1427. The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJC
3/15/2007

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